CLAIMS

Please amend the claims as follows.

1. (Original) A method for estimating the location of a wireless node relative to a plurality of radio receivers operative to detect the strength of RF signals, wherein a RF coverage map, corresponding to each of the radio receivers, characterizes the signal strength values for locations in a physical region, comprising

collecting signal strength values, detected at a plurality of radio receivers, corresponding to signals transmitted by a wireless node;

computing the estimated location of the wireless node based on the collected signal strength values and the RF coverage maps corresponding to the plurality of radio receivers, wherein the contribution of each detected signal strength value to the estimated location is weighted according to a weighting function that varies with the signal strength values detected by the radio receivers.

2. (Currently amended) The method of claim 1 wherein the computing step comprises

computing, for each radio receiver, an individual error surface based on the [[RR]]RF coverage map associated with the radio receiver and the signal strength detected by the radio receiver;

weighting each of the individual error surfaces according to a weighting function that varies with the signal strength detected by corresponding radio receivers;

aggregating the individual error surfaces to create a total error surface; and

finding the location of the minimum of the total error surface.

3. (Original) The method of claim 2 wherein each individual error surface comprises the sum of the squares of the difference between the signal strength values detected by a radio receiver and the signal strength values in a corresponding RF coverage map.

4. (Original) The method of claim 1 wherein the weighting function expresses the confidence in the individual error surface location relative to the distance error caused by potential errors associated with the signal strength detected by a radio receiver.

5. (Original) The method of claim 1 wherein the weighting function is configured such that contributions associated with detected signal strengths above a predetermined threshold value are equally weighted.

6. (Original) The method of claim 1 wherein the weighting function is based in part on the distance error caused by a 1 dB change in the signal strength detected by a radio receiver.

7. (Original) The method of claim 1 further comprising

detecting, at a plurality of radio transceivers, the strength of signals transmitted by a wireless node.

8. (Original) The method of claim 1 wherein the RF coverage maps each comprise a plurality of location coordinates associated with corresponding signal strength values.

9. (Original) The method of claim 8 wherein the RF coverage maps are heuristically constructed.

10. (Original) The method of claim 8 wherein the RF coverage maps are based on a mathematical model.

11. (Original) The method of claim 1 wherein the signals transmitted by the wireless nodes are formatted according to a wireless communications protocol.

12. (Original) The method of claim 11 wherein the wireless communications protocol is the IEEE 802.11 protocol.

13. (Original) The method of claim 1 wherein at least one of the collected signals is transmitted by the wireless node in a first frequency band, and wherein at least one other of the collected signals is transmitted by the wireless node in a second frequency band.

14. (Currently amended) A method for estimating the location of a wireless node relative to a plurality of radio receivers operative to detect the strength of RF signals, wherein a RF coverage map, corresponding to each of the radio receivers, characterizes the signal strength values for locations in a physical region, comprising

collecting signal strength values, detected at a plurality of radio receivers, corresponding to signals transmitted by a wireless node wherein at least one of the collected signals is transmitted by the wireless node in a first frequency band, and wherein at least one other of the collected signals is transmitted by the wireless node in a second frequency band;

computing the estimated location of the wireless node based on the collected signal strength values and the RF coverage maps corresponding to the plurality of radio receivers, wherein the contribution of each detected signal strength value to the estimated location is weighted according to a weighting function that varies with the

signal strength values detected by the radio receivers, ~~The method of claim 13~~ wherein the ~~weighing~~weighting function weights the signal strength values associated with the first frequency band higher than the signal strength values associated with the second frequency band.

15. (Original) The method of claim 1 wherein only signal strength values above a threshold signal strength value are used to compute the estimated location of the wireless node.

16. (Original) An apparatus facilitating the location of a wireless node in a RF environment, comprising

a plurality of radio receivers comprising at least one antenna, the plurality of radio receivers operative to detect the strength of signals transmitted by wireless nodes and provide the detected signal strengths to a wireless node location model; wherein a RF coverage map, corresponding to each of the radio receivers, characterizes the signal strength values for locations in a physical region, and

a wireless node location module operative to compute the estimated location of the wireless node based on the collected signal strength values and the RF coverage maps corresponding to the plurality of radio receivers, wherein the contribution of each detected signal strength value to the estimated location is weighted according to a weighting function that varies with the signal strength values detected by the radio receivers.

17. (Original) The apparatus of claim 16 wherein the wireless node location module, in computing the estimated location of the wireless node, is operative to

compute, for each radio receiver, an individual error surface based on the RF coverage map associated with the radio receiver and the signal strength detected by the radio receiver;

weight each of the individual error surfaces according to a weighting function that varies with the signal strength detected by corresponding radio receivers;

aggregate the individual error surfaces to create a total error surface; and

find the location of the minimum of the total error surface.

18. (Original) The apparatus of claim 17 wherein each individual error surface comprises the sum of the squares of the difference between the signal strength values detected by a radio receiver and the signal strength values in a corresponding RF coverage map.

19. (Original) The apparatus of claim 16 wherein the weighting function expresses the confidence in the individual error surface location relative to the distance error caused by potential errors associated with the signal strength detected by a radio receiver.

20. (Original) The apparatus of claim 16 wherein the weighting function is configured such that contributions associated with detected signal strengths above a predetermined threshold value are equally weighted.

21. (Original) The apparatus of claim 16 wherein the weighting function is based in part on the distance error caused by a 1 dB change in the signal strength detected by a radio receiver.

22. (Original) The apparatus of claim 16 wherein the RF coverage maps each comprise a plurality of location coordinates associated with corresponding signal strength values.

23. (Original) The apparatus of claim 22 wherein the RF coverage maps are heuristically constructed.

24. (Original) The apparatus of claim 22 wherein the RF coverage maps are based on a mathematical model.

25. (Original) The apparatus of claim 16 wherein the signals transmitted by the wireless nodes are formatted according to a wireless communications protocol.

26. (Original) The apparatus of claim 25 wherein the wireless communications protocol is the IEEE 802.11 protocol.

27. (Original) A method for estimating the location of a wireless node relative to a plurality of radio receivers operative to detect the strength of RF signals, wherein a RF coverage map, corresponding to each of the radio receivers, characterizes the signal strength values for locations in a physical region, comprising

collecting signal strength values, detected at a plurality of radio receivers, corresponding to signals transmitted by a wireless node; and

computing the estimated location of the wireless node by comparing, for all unique pairs of radio receivers, the differences in the signal strength values detected by the plurality of radio receivers to corresponding differences in the signal strength values in the RF coverage maps associated with the plurality of radio receivers, wherein the

comparison is weighted as a function of at least one of the signal strength values detected by each unique pair of radio receivers.

28. (Currently amended) A method for estimating the location of a wireless node relative to a plurality of radio receivers operative to detect the strength of RF signals, wherein a RF coverage map, corresponding to each of the radio receivers, characterizes the signal strength values for locations in a physical region, comprising

collecting signal strength values, detected at a plurality of radio receivers, corresponding to signals transmitted by a wireless node; and

computing the estimated location of the wireless node by comparing, for all unique pairs of radio receivers, the differences in the signal strength values detected by the plurality of radio receivers to corresponding differences in the signal strength values in the RF coverage maps associated with the plurality of radio receivers, wherein the comparison is weighted as a function of at least one of the signal strength values detected by each unique pair of radio receivers ~~The method of claim 27~~, and wherein the computing step comprises

computing, for all unique pairs of radio receivers, the sum of the squares of the difference between the signal strength values detected by a pair of radio receivers less the difference between the signal strength values in the RF coverage maps associated with the pair of radio receivers;

weighting each of the computed sums based on the lower of the two signal strength values detected by the corresponding pair of radio receivers;

combining the weighted sums to create a differential error surface; and

finding the minimum of the differential error surface.

29. (Original) The method of claim 27 further comprising

detecting, at a plurality of radio transceivers, the strength of signals transmitted by a wireless node.

30. (Original) The method of claim 27 wherein the RF coverage maps each comprise a plurality of location coordinates associated with corresponding signal strength values

31. (Original) The method of claim 30 wherein the RF coverage maps are heuristically constructed.

32. (Original) The method of claim 30 wherein the RF coverage maps are based on a mathematical model.

33. (Original) The method of claim 27 wherein the signals transmitted by the wireless nodes are formatted according to a wireless communications protocol.

34. (Original) The method of claim 33 wherein the wireless communications protocol is the IEEE 802.11 protocol.

35. (Original) A wireless node location mechanism operating in association with a wireless network environment comprising a plurality of radio receivers operative to detect the signal strength of signals transmitted by wireless nodes, wherein a RF coverage map, corresponding to each of the radio receivers, includes signal strength values for locations in a physical region, comprising:

a wireless node location module operative to

receive, from at least some of the plurality of radio receivers, the detected signal strength of RF signals transmitted by a wireless node; and

compute the estimated location of the wireless node based on the received signal strength values and the RF coverage maps corresponding to the plurality of radio receivers, wherein the contribution of each detected signal strength value to the estimated location is weighted according to a weighting function that varies with the signal strength values detected by the radio receivers.

36. (Original) The wireless node location mechanism of claim 35 wherein the wireless node location module, in computing the estimated location of the wireless node, is operative to

compute, for each radio receiver, an individual error surface based on the RF coverage map associated with the radio receiver and the signal strength detected by the radio receiver;

weight each of the individual error surfaces according to a weighting function that varies with the signal strength detected by corresponding radio receivers;

aggregate the individual error surfaces to create a total error surface; and

find the location of the minimum of the total error surface.

37. (Original) The wireless node location mechanism of claim 36 wherein each individual error surface comprises the sum of the squares of the difference between the signal strength values detected by a radio receiver and the signal strength values in a corresponding RF coverage map.

38. (Original) The wireless node location mechanism of claim 35 wherein the weighting function expresses the confidence in the individual error surface location relative to the distance error caused by potential errors associated with the signal strength detected by a radio receiver.

39. (Original) The wireless node location mechanism of claim 35 wherein the weighting function is configured such that contributions associated with detected signal strengths above a predetermined threshold value are equally weighted.

40. (Original) The wireless node location mechanism of claim 35 wherein the weighting function is based in part on the distance error caused by a 1 dB change in the signal strength detected by a radio receiver.

41. (Original) The wireless node location mechanism of claim 35 wherein the RF coverage maps each comprise a plurality of location coordinates associated with corresponding signal strength values.

42. (Original) The wireless node location mechanism of claim 41 wherein the RF coverage maps are heuristically constructed.

43. (Original) The wireless node location mechanism of claim 41 wherein the RF coverage maps are based on a mathematical model.

44. (Original) The wireless node location mechanism of claim 35 wherein the signals transmitted by the wireless nodes are formatted according to a wireless communications protocol.

45. (Original) The wireless node location mechanism of claim 44 wherein the wireless communications protocol is the IEEE 802.11 protocol.

46. (Original) The wireless node location mechanism of claim 35 further comprising a plurality of radio receivers operative to detect the signal strength of signals transmitted by wireless nodes.